VERSIONS WITH MARKING TO SHOW CHANGES MADE

In the Specification

Page 5, last sentence beginning at line 22 was amended as follows: According to the conditions of the detection method, the binding of the analyte to the sensing element yields a [luminescent]colorimetric event (e.g., fluorescence, phosphorescense) that is, a signal, which , when processed or monitored by an optical reader indicates the presence of an analyte of interest in the target sample.

Page 19, the sentence beginning at line 6 was amended as follows: In [luminescent]colorimetric-event detection, and in particular fluorescence-detection methods, a fluorescent molecule has the ability to absorb photons of energy at one wavelength and subsequently emit the energy at another wavelength.

Page 20, the sentence beginning at line 18 was amended as follows: A "reporter probe" refers to a labeled molecule that yields a [luminescent]colorimetric event upon exposure to excitation energies.

Page 21, the sentence beginning at line 5 was amended as follows: Since each marker has its own [luminescent] colorimetric character, more than one molecule, each tagged with a different marker can b e used at the same time to detect two or more analytes of interest.

Page 35, the two sentences beginning at line 17 were amended as follows: The reporter probe (75) will react, combine, or otherwise bind to an analyte (85) of interest, thereby causing a [luminescent] colorimetric effect upon exposure to excitation energy. This [luminescent] colorimetric effect indicates the presence of the analyte of interest (85).

Page 40, the sentence beginning at line 5 was amended as follows: This experiment was performed to show that a fluorescently labeled sensing element produces a detectable [luminescent] colorimetric effect (e.g., fluorescence) when bound to the top surface of the

platform.

Page 40, the sentence beginning at line 13 was amended as follows: This experiment was performed to show that an unlabeled sensing element bound to the surface of the matrix does not produce a [luminescent] colorimetric effect.--

Page 40, the sentence beginning at line 19: --This experiment was performed to show that a fluorescently labeled analyte (e.g., nucleic acid) that hybridizes to a sensing element bound to the surface of the matrix produces a [luminescent] colorimetric effect.--

Page 41, the sentence beginning at line 7: --This experiment was performed to show that unlabeled nucleic acid sensing elements spotted onto the surface of the matrix do not produce a [luminescent] colorimetric effect.--

In the Claims

1-55. Canceled.

56. (Added) A biochip comprising:

a carrier coupled to a multi-functional matrix layer that is coupled to a sensing element,

wherein the a multi-functional matrix layer provides reduction of at least one of an autofluorescence of the carrier, an incident-light-absorption of the carrier, and a surface unevenness of the carrier; and

wherein the sensing element binds to an analyte that is disposed in a sample fluid when the sample fluid contacts the biochip.

57. (Added) The biochip of claim 56 wherein the carrier comprises an organic polymer or an inorganic polymer.

58. (Added) The biochip of claim 57 wherein the organic polymer is selected from the group consisting of a polyethylene, a polyester, and a polystyrene.

59. (Added) The biochip of claim 56 further comprising a hydrophilic interposed layer between the carrier and the multi-functional matrix layer.

60. (Added) The biochip of claim 56 wherein the multi-functional matrix layer comprises an aqueous solvent.

61. (Added) The biochip of claim 60 wherein the multi-functional matrix layer comprises a material selected from the group consisting of an agarose, a polyacrylamide, and a gelatin.

62. (Added) The biochip of claim 56 further comprising a second multi-functional matrix layer wherein the second multi-functional matrix layer is coupled to the multi-functional matrix layer and provides reduction of at least one of an autofluorescence of the carrier, an incident-light-absorption of the carrier, and a surface unevenness of the carrier.

63. (Added) The biochip of claim 56 wherein the sensing element comprises at least one of a polypeptide and a polynucleotide.

64. (Added) The biochip of claim 56 wherein the sensing element is at least partially embedded within the multi-functional matrix layer.

65. (Added) The biochip of claim 56 wherein the sensing element is coupled to the multi-functional matrix layer via a cross linking agent.

66. (Added) The biochip of claim 65 wherein the cross linking agent comprises a first portion that is coupled to the matrix layer and a second portion that is coupled to the sensing element, and wherein the first and second portions form a non-covalent bond with each other.

67. (Added) The biochip of claim 66 wherein the first portion comprises avidin or streptavidin, and wherein the second portion comprises biotin.

68. (Added) The biochip of claim 56 wherein the analyte is selected from the group consisting of a receptor, an enzyme, a oligonucleotide, a polynucleotide, a toxin, a venom, an antibody, an oligosaccharide, and a viral epitope.

69. (Added) The biochip of claim 68 wherein the sample fluid comprises a cell, a subcellular component, a component from a plant, a component from a virus, or a component from a microorganism.

70. (Added) The biochip of claim 56, wherein the multi-functional matrix layer comprises at least one of a surfactant, a humectant, a buffer, and a light blocking agent.

71. (Added) The biochip of claim 56 further comprising a second multi-functional matrix layer, wherein at least one of the multi-functional matrix layer and the second multi-functional matrix layer comprises at least one of a surfactant, a humectant, a buffer, and a light blocking agent.